

FO-2213 Forest Measurements
Topic 34: The 7.5 minute Quadrangle

Use of a 7.5 minute Quadrangle (Each student has a quad sheet)

Date, scale, magnetic north, grid north

When was the quad sheet last updated?

The scale is given as 1:24,000; what are other equivalent scales for a quad sheet?

1" = 2,000 feet

1" = 30.3 chains

1" = 609.6 meters

What was magnetic north when the quad sheet was updated?

What is the difference between true north, magnetic north, and grid north?

Grid north = the orientation of the UTM grid lines

Magnetic north = the pole to which a magnetic compass needle points.

True north = actual/true pole of the earth's sphere.

For each 1 degree difference in Grid and Magnetic north; subtract 7.02 m from the northing coordinate to get to magnetic.

1 degree diff

Chains	Meters	Grid - Mag
20	402.336	-7.02m
40	804.672	-14.05m
60	1207.008	-21.07m
80	1609.344	-28.09m

GLO section, township, range designations

Township designations are on the right and left margins.

Range designations are on the top and bottom margins.

Section numbers are in the center of each section.

Exercise: Use your engineer rule and the 60 scale to measure width and length of sections.

Use the 20 scale (1"=2,000 ft) and measure thousands of feet.

Use the 30 scale (1"=30.3 chains) and measure chains.

Exercise: Describe an instructor designated parcel in GLO legal terms.

Latitude/Longitude tic marks

Latitude is marked up the right/left margins; longitude across the top/bottom margins.

Look at the lower right corner; what is the latitude of this corner of the quad sheet?

Look up the right margin from the corner and find the 2 ½ minute mark.

Look at the top right corner of the quad sheet; what is the latitude and how much has it changed from the lower right hand corner? Answer: 7.5 minutes

Longitude: what is the difference between the right and left sides of the quad? 7.5'

Exercise: Compute the latitude and longitude scale for the NE portion of the quad.

Compute the lat/long coordinates of an instructor designated point on the quad.

UTM tic marks

Notice the Northing designations on the right/left margins. 36₉₃ denote what?

Answer: tics are in 1,000 meter intervals; there are 000's missing, thus 3,695,000m.

Notice the Easting designations on the top/bottom margins; 3₃₆ denotes what?

Answer: 336,000m

Exercise: Compute the UTM coordinates for an instructor designated point.

Problem: You are located in an area where the magnetic declination is 5 degrees west.

Your GPS unit records the UTM coordinates at your pickup truck as 324,695.2 m E, and 3,625,593.6 m N and then you travel to coordinates 324,348.79 m E and 3,624,913.6 m N. You calculate that in order to return to your truck by the most direct route, you must set your compass to a **magnetic azimuth** of _____ (decimal degrees) and pace a distance of _____ chains (3 decimals).

Contour lines and index contours

What is the vertical scale of the quad sheet? Answer: 10 or 20 ft contour intervals.

Since we can measure horizontal distance, compute percent slope with distance and elevation between two points. %slope = elevation change ÷ horizontal distance x 100

Exercise: Compute the percent slope between two instructor-designated points.

Roads and Linear Features

Paved vs gravel vs trails vs railroad tracks.

Hydrology

Stream and water designations.

Flowing vs. intermittent stream

Which direction is stream flowing; how do you know?

Exercises

1. What is the airline distance from Dorman Lake Road on Hwy 25 to Keaton Road?
2. What is the “along road” distance from Dorman Lake Road to Ennis Road?